

Os Odontoideum의 진단 및 치료

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= Abstract =

Diagnosis and Management of Os Odontoideum

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The authors analyzed 17 cases of os odontoideum, a very rare condition and one of the causes of atlantoaxial instability. We investigated the radiographic findings of os odontoideum and classified the patients according to clinical grade, radiographic findings and direction of atlantoaxial instability. Their mean age was 33.4 years, and the male to female ratio was.

7 : 10. Thirteen patients(76.5%) were classified as clinical grade 3, indicating fixed or progressive myelopathy. They were classified as one of two types, according to the location of the os, five were dystopic and ten were orthotopic. In remaining two patients, it was difficult to classify. We measured SAC(space available for cord) laterally, using plain film, and sagittally, using MR imaging, and compared the results with clinical symptoms. SAC as seen on cervical MRI, correlated more closely with severity of cord compression than did SAC seen on plain film. The 15 patients underwent various operative methods including C1/2 fixation, occipito - cervical fusion, and transoral decompression ; because of postoperative hardware failure, two required further surgery. Postoperatively, twelve patients showed excellent or good neurologic improvement.

In this retrospective study, SAC seen on cervical MRI was a very good indicator of the need for surgery, and surgery should be considered in patients whose clinical grade is higher than 2.

KEY WORDS : Os odontoideum · Atlantoaxial instability · SAC(Space Available for Cord).

서 론

¹²⁾²³⁾. Os odontoideum

Os odontoideum (odontoid process) (body) 2 (os)가 .
3). 1, 2 2)4)19). os odontoideum 10 os odontoideum 17 1, 2 1, 2

연구대상 및 방법

10 os odontoideum
17
4
12)19). Grade 1
(local symptom), Grade 2
(transient myelopathy)
, Grade 3
(fixed or progressive myelo-
pathy)가, Grade 4
(myelopathy with cerebral symptom)
(Table 3).
X - ,
(cervical MRI), (myelography)
, 2 (os)
dystopic, orthotopic 1, 2
(instability) (flexion),
(extension) 가
SAC
(Space Available for Cord) 10)20)
SAC X MRI

결 과

1. 연령 및 성별 분포
33.4±19.3
30, 40 가 3 가
6 , 63
7 : 10 (Table 1).
2. 임상 증상 및 분류
17
,
, 가

Table 1. Age and Sex

Age (Years)	Male	Female
- 10	1	2
11 - 20	1	1
21 - 30	1	1
31 - 40	2	1
41 - 50	-	3
51 - 60	-	2
61 -	2	
Total	7	10

Table 2. Clinical manifestations

Signs and symptoms	No. of cases(%)
Neck pain	17 (100.0)
Sensory disturbance	14 (82.4)
Motor weakness	13 (76.5)
Bladder/bowel symptoms	3 (17.6)
Headache	3 (17.6)
Dizziness	2 (11.8)

Table 3. Clinical grading

Grade	Clinical symptoms
Grade 1 (2)	Local symptoms
Grade 2 (2)	Transient myelopathy
Grade 3 (13)	Fixed or progressive myelopathy
Grade 4 (0)	Myelopathy with cerebral symptoms

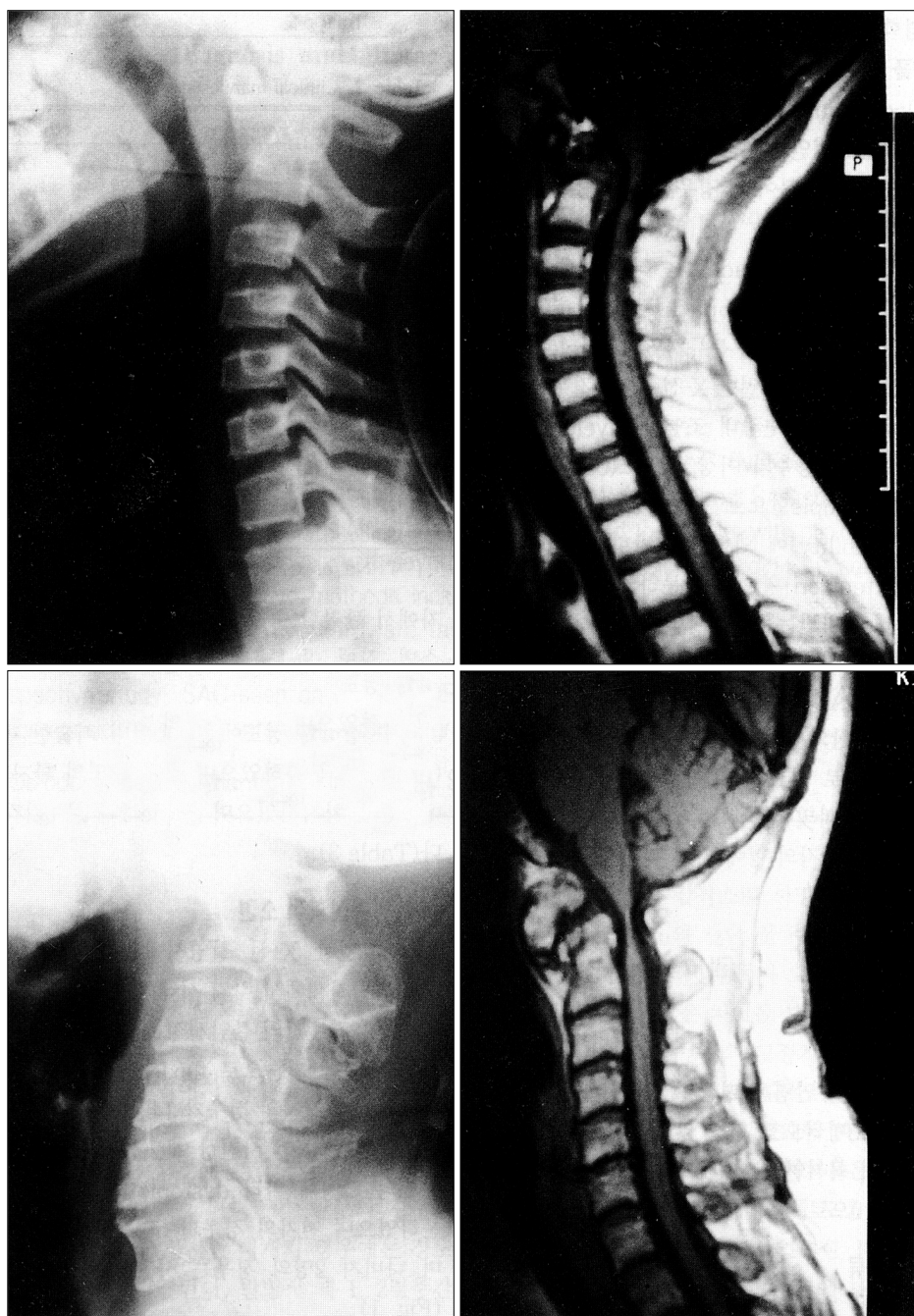
() : No. of cases

(Ta-
ble 2).

4
(grade) 13 가 grade 3
grade 1 2 2
(Table 3).

3. 방사선학적 소견

X - (flexion), (exte-
nsion)
1, 2 (displacement)가
flexion extension
가 14 , 가 3
X 2
dystopic orhtotopic
가 5 , 가 10
2 (Fig. 1).
1
(posterior arch) (hypoplasia) 2
1 (anterior arch) (hype-



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가 3 C1/
2 trans - articular screw fixation & wire fixation
Halifax loosening C1/2 wire
fixation 2
occipito - cervical CD plate가 가 1
SAC
SAC
X - grade 1 13.5mm, grade 2가
13.0mm, grade 3 11.4mm 가
grade 1 14.0mm, grade 2
10.4mm, grade 3 6.7mm SAC
가
(Table 4).
4. 치 료
17 (cervical tract -
ion) 1, 2 (reduction)
Holter traction, G - tong, C - tong
가 3 (irreducible type)
(decompression)
1, 2 (fusion)
os
second stage operation
(occipito - cervical fusion)
1 1
가 14 10
2
2
가
(wire)
1, 2
trans - articular C1, 2 fixation
CD
plate (Table 5).
hardware failure가

Table 4. SAC in plain film & MRI or myelogram

SAC	Grade 1	Grade 2	Grade 3
SAC in plain	13.5mm	13.0mm	11.4mm
SAC in MRI	14.0mm	10.4mm	6.7mm

SAC : Space Available for Cord

5. 치료 결과

15 2 grade 1
grade 2 13 grade 3
2
hardware failure

가 2
grade 3 13 5
5
가
3
(Table 6). - (occipito - cervical fusion
with CD plate)

고 찰

Os odontoideum

Table 5. Types of operations in 15 patients

Types	No. of cases
Trans Oral decompression & O-C fusion	2
C1 - 2 posterior fusion	12
With Wire	6
Halifax	2
Transarticular screw	4
Occipito-Cervical fusion	3
Total	17*

*2 cases : Reoperation

Table 6. Postoperative result in neurologic function

Postop. neurologic deficit	No. of cases (%)
No neurologic deficit, com-	7 (46.7)
Improved	5 (33.3)
Same as preoperative deficit	3 (20.0)
Total	15 (100)

(minor injury) (micro - frac -
ture)
2)23) 2)12)13)20)
3)4) 가 가 가
os os odontoideum pseudoarthrosis
1, 2 가
가 1, 2
1, 2 (displaceme - 가 가
nt) 12)23) os odontoideum socket -
pseudoarthrosis가 like movement
1, 2 가 ings Braakman os odontoideum
1, 2 가 1, 2
2)11) 가 1, 10)14)20)
2 (, ADI



Fig. 2. The difference of value of SAC between on plain X-ray and on cervical MR was well presented on this figure. The SAC on cervical MR was more related to the severity of cord compression.

(Atlas Dens Interval) SAC, MRI ADI SAC 1, 2 (reducible) (irreducible) SAC

ADI SAC 가 . SAC

가 . SAC 가

12). 가

가 1, 2 13mm SAC 13mm

(Fig. 2) 1, 2 (transverse ligament) 가 가 . 가 SAC

os 가 15)18). Nobuki Shirasaki (infolding) 14).

ade 1 , Gr - 가 (anterior approach) (transoral clivus - C2 fusion) (Fig. 3) 1 , os

17). os odontoideum 7).

ings Braakman Grade 1 16 , Spier - (low fusion rate) 가 . 2

20). 2 Grade 1 1 . 가

1 1

grade 1 , os 가 가 1

1, 2 13mm 가 1

17). 14)14)23) 1, 2 , 가

Grade 2 가 SAC (occipitocervical fusion) 1, 2 가

가 1 (occipitocervical fusion) (Fig. 4). 가

Grade 3

23). Grade 3 가 .

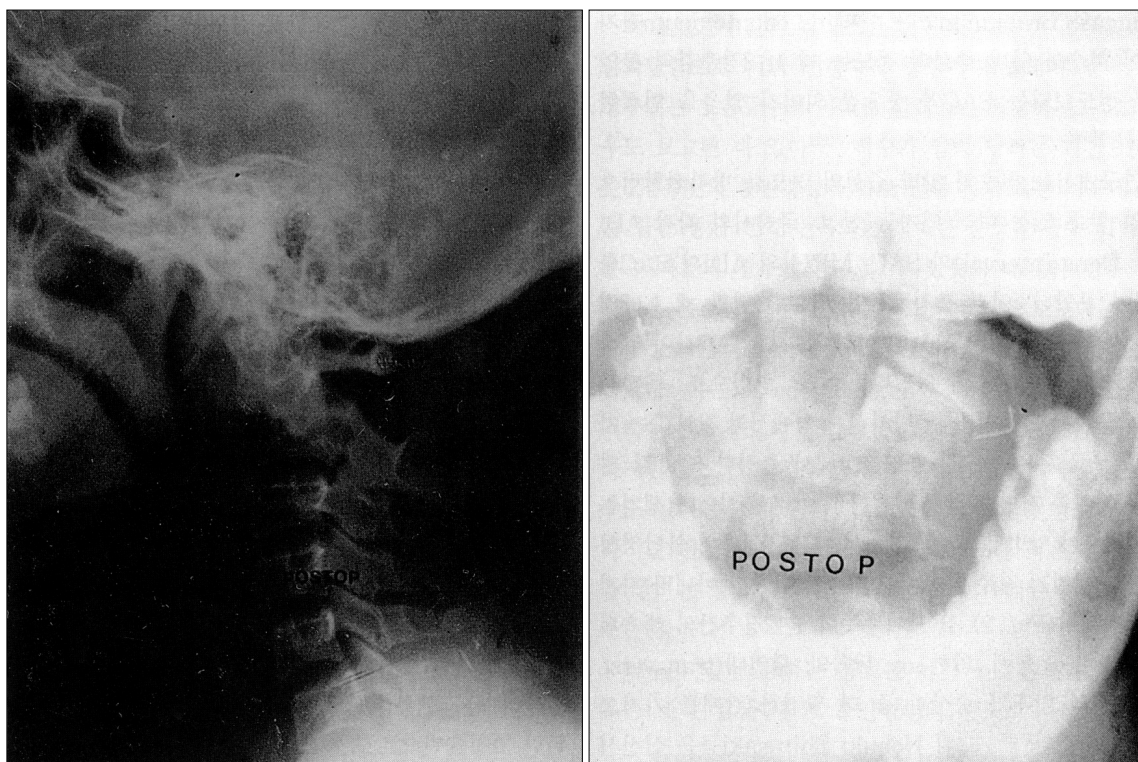


Fig. 3. A case of transoral clivus-C2(axis) fusion.

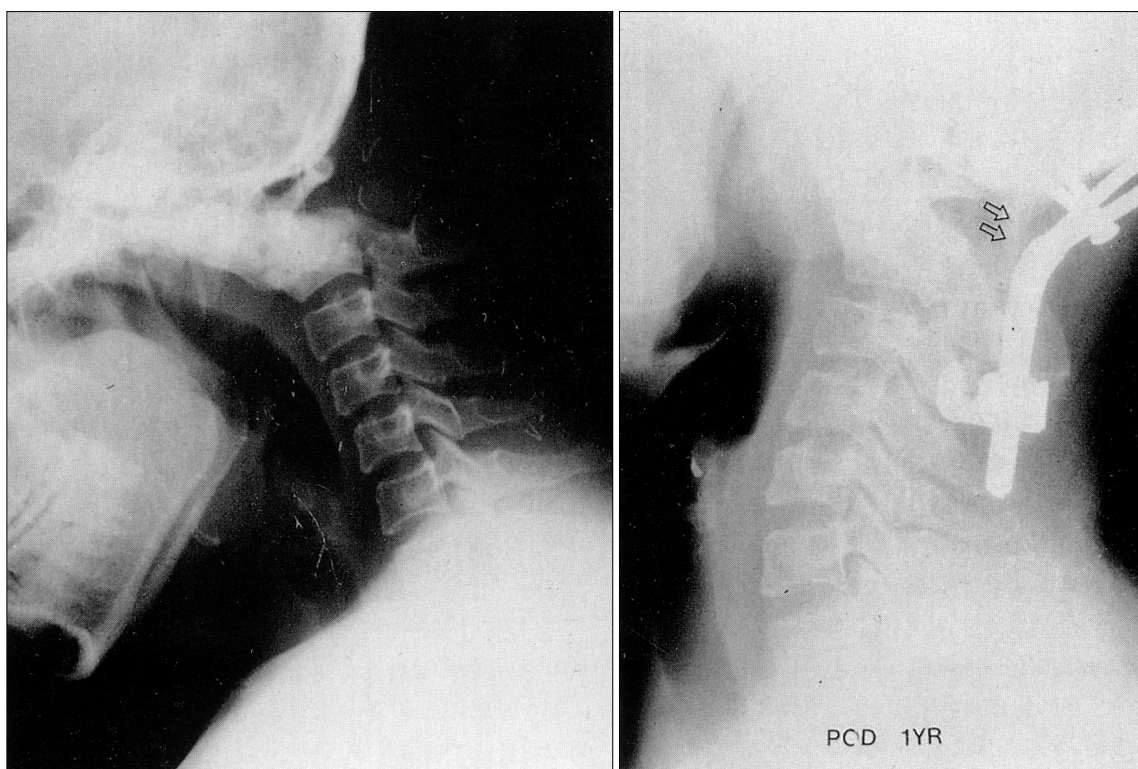


Fig. 4. A case of posterior fusion with CD plate(occipitocervical fusion).

1, 2 wire, Halifax, trans-
articular screw
transarticular screw fixation(Fig. 5)

1, 2
가
Halifax
1, 2
가
1 Halifax

1)4)14)23)

가
가

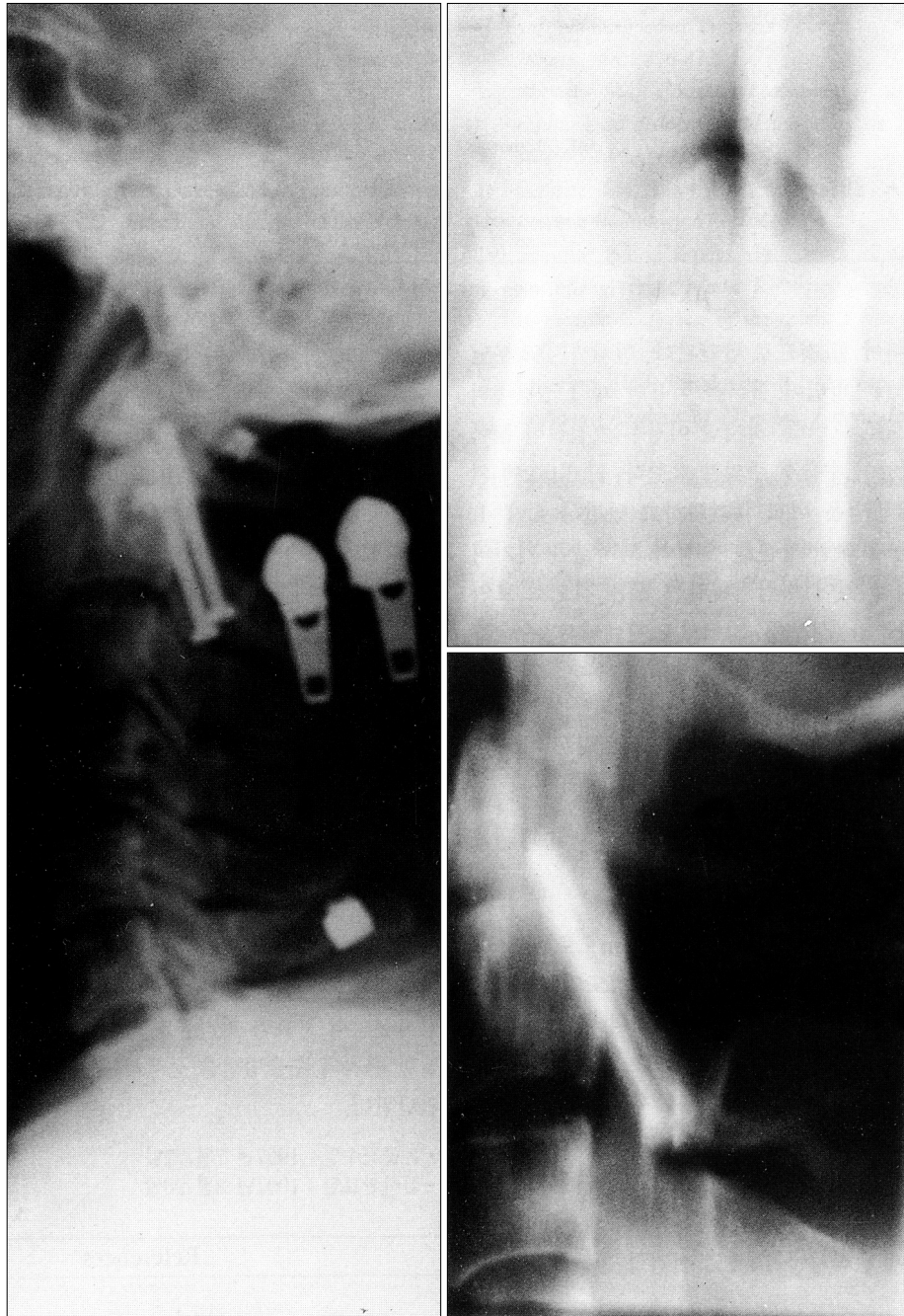


Fig. 5. A case of transarticular C1-2 screw fixation. This method was available on the case of C1 laminectomy postoperative state.

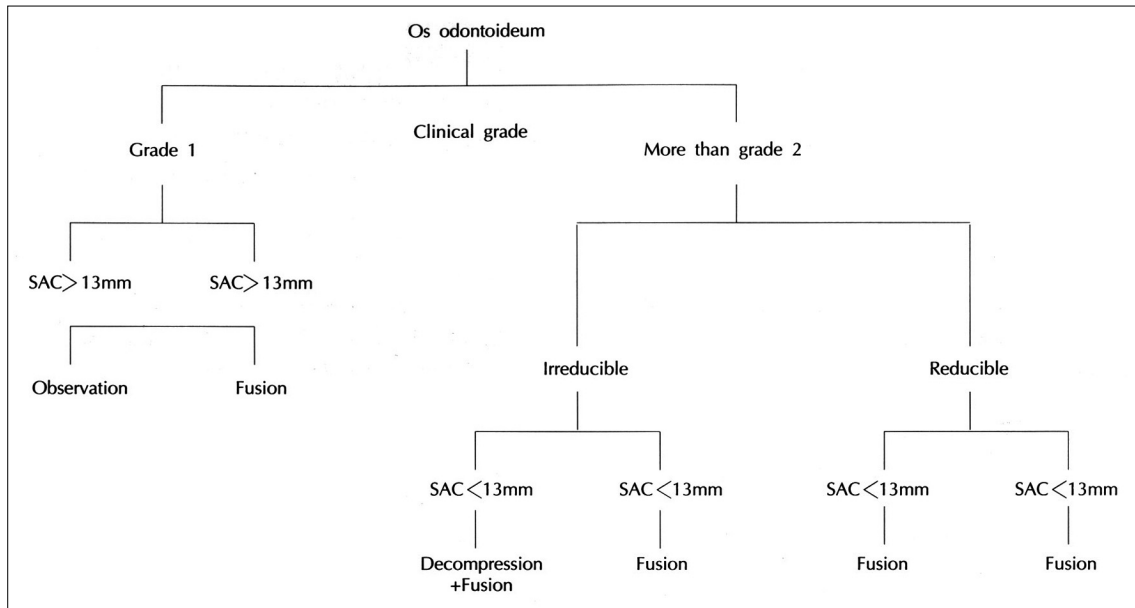


Fig. 6. Treatments of os odontoideum.

(Fig. 6).

결론

10 os odontoideum

17

1)

grade 1 가 2 gr -
ade 2 2 , grade 3 13
2) dystopic 5 , orthotopic
10 14 3

3)

14 가
3) 가
4) 가 SAC, ADI
SAC가

5)

가
SAC 13mm
가
SAC 13mm

6) 2 hardware failure가

7)

15

12 (80%)

os odontoideum

SAC
가

- : 1997 7 7
- : 1997 8 20

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